## Space Weather Forecast

Issued on Thursday, 15 June 2023 at 01:21 Local

**This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales**

**Space Weather Forecast Headline: Chance of Solar Activity rising to Moderate with R1/R2 Radio Blackouts.**

**Analysis of Space Weather Activity over past 24 hours**

**Solar Activity:** Low with only common class flares observed, the largest from a decayed sunspot region in the southwest. Two sunspot ground near the southeast limb are likely the most complex of the seven small and relatively simple regions on the disc, although they remain difficult to assess given their viewing angle. Further detail is expected to become apparent as they moves to a less oblique viewing angle. A small filament, which is an arc of material held together by the Suns magnetic field, erupted from the SW-disc around 14/1800 UTC although no Earth-directed CMEs have been observed. There are also a number of other large filaments on the Earth-facing disc, with the potential to produce Earth-directed CME's if they were to erupt.

**Solar Wind / Geomagnetic Activity:** The solar win was at background, around 350km/s. The total magnetic field strength was weak, with the north-south component also weak and variable between positive (north) and negative (south) directions. Geomagnetic activity was mostly Quiet, with an Unsettled interval observed at 14/0000-0300UTC.

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (High energy protons) remained at background with no solar radiation storms occurring.

**Four-Day Space Weather Forecast Summary**

**Solar Activity:** Low activity is most likely to continue, however there is a chance of this increasing to Moderate with isolated M-flares (R1/R2 Radio Blackouts).

**Solar Wind / Geomagnetic Activity:** There are no Earth-directed CMEs. Solar winds are forecast to be at background to slightly elevated until the next coronal hole sourced fast wind enhancement, expected later on day 1 and into day 2 (15 and 16 Jun). Solar winds of around 500 km/s are forecast. Mostly Quiet geomagnetic activity at first, rising to Unsettled with Active spells with the fast wind enhancement. There is a chance of G1/Minor Storm intervals, mainly early on day 2 (16 Jun). Activity easing to Quiet with Unsettled intervals day 3 and 4 (17-18 Jun).

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (High energy protons) is forecast to persist at background with no solar radiation storms occurring.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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# Met Office Space Weather Forecast

**Geomagnetic Storms:**

| Geo-Magnetic Storm Probability (Exceedance) | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Minor or Moderate | G1 to G2 | No | 15 | 20 | 1 | 1 |
| Strong | G3 | No | 1 | 1 | 1 | 1 |
| Severe | G4 | No | 1 | 1 | 1 | 1 |
| Extreme | G5 | No | 1 | 1 | 1 | 1 |

**Radio Blackouts - X Ray Flares:**

| X Ray Flares Probability | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | R1-R2 M Class | No | 30 | 30 | 30 | 30 |
| Very Active | R3 to R5 X | No | 2 | 2 | 2 | 2 |

**Solar Radiation Storms - (High Energy Protons):**

| Radiation Storms Probability (Exceedance) | Level ($cm^{-2}$ $sr^{-1}$ $s^{-1}$) | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | ≥ S1 | No | 1 | 1 | 1 | 1 |
| Very Active | ≥ S3 * | No | 1 | 1 | 1 | 1 |

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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